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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/101,833	01/29/1999	YASUJI HIRAMATSU	PM255101	1115

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PILLSBURY WINTHROP LLP
INTELLECTUAL PROPERTY GROUP
1600 TYSONS BOULEVARD
MCLEAN, VA 22102

EXAMINER

EVANS, GEOFFREY S

ART UNIT	PAPER NUMBER
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1725

DATE MAILED: 11/30/2001

16

Please find below and/or attached an Office communication concerning this application or proceeding.

ML

Office Action Summary	Application No.		Applicant(s)	
	09/101,833		HIRAMATSU, YASUJI	
	Examiner		Art Unit	
	Geoffrey S Evans		1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 September 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 13-25 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-4, 7, 8/7, 9/8/7, 10 is/are allowed.
- 6) ☒ Claim(s) 4, 5, 6, 8/5, 8/6, 9/8/5, 9/8/6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>16</u> . | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

1. The disclosure is objected to because of the following informalities: Reference to specific claims in the specification is not permitted. There are too many instances to point them each out specifically. Examples are "claim 7" on page 10, line 1. See also page 10, line 28 "claims 10"; page 14, line 2 "claim 13"; page 14, line 18 "claim 14"; page 20, lines 15 "claim 20" and 26 "claim 21", page 21 line 26 ; see page 23, lines 3,4, and 10.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muncheryan (180) in view of DeRossett, Jr. in U.S. Patent No. 5,298,717, Lizotte et al. in U.S. Patent No. 6,256,121, and Okada et al. in U.S. Patent No. 5,690,846. Muncheryan discloses a carbon dioxide laser (see column 9, line 53) and a harmonic wave generator (element 12; see column 5 lines 63-64) but does not disclose a scanning head for deflecting the beam in the XY directions and not diffraction control of the laser beam. DeRossett, Jr. teaches using a scanning head for deflecting the beam in two directions (see column 5, lines 43-57) and using inputs to the scanning head from

an optical fiber (see column 10, lines 56-59). Lizotte et al. teaches using a flat field collimating lens system to correct angular beam output (diffraction) from the scanning mirrors (the collimator lens system in figure 1 of the instant application is presumed to be what is the "diffraction control" in claim 5 as it is the only possible element in the elected species 1-6 capable of controlling diffraction). Okada et al. teaches that it is known to use a carbon dioxide laser to drill holes (to the extent this teaching is necessary). It would have been obvious to adapt Muncheryan in view of DeRossett, Jr. , Lizotte et al., and Okada et al. to provide this to provide a laser treatment in a two dimensional plane and to use the collimating lens system of Lizotte et al. to accurately form the via holes.

4. Claims 8/5 and 9/5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muncheryan in view of DeRossett, Jr. , Lizotte et al. , and Okada et al. as applied to claim 5 above, and further in view of Roland et al. in U.S. Patent No. 3,792,287.

Roland et al. in column 6, lines 14-16 teaches using a carbon dioxide laser with a thallium-arsenic-selenium crystal to obtain a harmonic frequency. It would have been obvious to adapt Muncheryan in view of DeRossett, Jr. , Lizotte et al., Okada et al., and Roland et al. to provide this to double the laser beam frequency.

5. Claims 6 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muncheryan (180) in view of DeRossett, Jr. in U.S. Patent No. 5,298,717 and Kumar in U.S. Patent No. 5,227,013. Muncheryan discloses a carbon dioxide laser (see column 9, line 53) and a harmonic wave generator (element 12; see column 5 lines 63-64) but does not disclose a scanning head for deflecting the beam in the XY

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directions, nor does Muncheryan disclose forming a via hole by exposing a conductive element in an interlayer resin. DeRossett, Jr. teaches using a scanning head for deflecting the beam in two directions (see column 5, lines 43-57) and using inputs to the scanning head from an optical fiber (see column 10, lines 56-59). Kumar teaches using a carbon dioxide laser (see column 5, line 48) to drill vias through polymers (interlayer resin) to expose a copper conductive element (see column 5, lines 38-40). It would have been obvious to adapt Muncheryan in view of DeRossett, Jr. and Kumar to provide this to form vias two dimensionally in a substrate through interlayer resins to a conductive element.

6. Claims 8/6 and 9/6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muncheryan in U.S. Patent No. 5,979,180 in view of DeRossett, Jr. and Kumar as applied to claim 6 above, and further in view of Roland et al. in U.S. Patent No. 3,792,287. Roland et al. in column 6, lines 14-16 teaches using a carbon dioxide laser with a thallium-arsenic-selenium crystal to obtain a harmonic frequency. It would have been obvious to adapt Muncheryan in view of DeRossett, Jr., Kumar, and Roland et al. to provide this to double the laser beam frequency.

7. Applicant's arguments filed September 14, 2001 have been fully considered but they are not persuasive. Kumar discloses forming laser vias in a interlayer resin by exposing a conductor. Lizotte et al. discloses diffraction control by a collimating lens system.

8. Claims 1-4, 7, 8/7, 9/8/7, and 10 are allowed.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey S Evans whose telephone number is (703)-308-1653. The examiner can normally be reached on Mon-Fri 6:30AM to 4:00 PM, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (703)-308-3318. The fax phone numbers for the organization where this application or proceeding is assigned are (703)-305-7718 for regular communications and (703)-305-5585 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)-308-0661.

Geoffrey S Evans
Primary Examiner
Art Unit 1725

GSE
November 18, 2001